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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,913	03/30/2004	Paul Hanrieder	57983.000165	3176

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EXAMINER

BAE, JI H

ART UNIT	PAPER NUMBER
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2115

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/811,913

Applicant(s)

HANRIEDER ET AL.

Examiner

Ji H. Bae

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

Applicant's arguments, see applicant's remarks, filed on 8 March 2007, with respect to the rejection(s) of claim(s) 1-20 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 8, 10, and 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Butler, U.S. Patent No. 5,197,026.

Regarding claim 1, Butler teaches a non-volatile electronic memory configuration comprising:

a volatile memory [Fig. 1, DRAM memory 10];

a non-volatile memory coupled to the volatile memory [Fig. 1, EEPROM memory 12];

a controller [Fig. 1, compare logic, EEPROM/DRAM data page latches, and control logic] coupled to the volatile memory and the non-volatile memory that monitors data storage changes

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made within the volatile memory [tracking data changes, col. 5, lines 37-40] and controls the transfer of stored data from the volatile memory to the non-volatile memory, and vice-versa, based upon the monitored data storage changes [col. 4, lines 40-69] when power is above a particular minimum operating voltage level [col. 2, lines 1-11]¹; and

a power level detector that detects when power is above the particular minimum voltage level [col. 5, lines 29-36, detection of power restoration].

Regarding claim 5, Butler teaches that the volatile memory is a DRAM [Fig. 1, DRAM 10].

Regarding claim 8, Butler teaches that the non-volatile memory operates at a lower speed than the volatile memory [col. 1, lines 51-59].

Regarding claim 10, Butler teaches that the controller is a fixed function processing device.

Regarding claim 12, Butler teaches the transferal of stored data from the non-volatile memory to the volatile memory immediately following a restoration of power to above the particular minimum operating voltage level [col. 5, lines 29-36].

Regarding claim 13, Butler teaches that the power level detector provides an indication to the controller that power is above the particular minimum operating voltage level [Fig. 1, power restore detect signal 34].

Regarding claims 14-16 and 20, Butler teaches the memory configuration of claims 1, 12, and 13, and also the method implemented by the claimed configuration.

¹ The invention is concerned with power failure conditions, and the backup operations are thus not carried out when a power failure occurs since the DRAM contents are lost when voltage falls below the minimum required for operation.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4, 9, 11, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butler, U.S. Patent No. 5,197,026, in view of Portman et al., U.S. Patent No. 6,496,939 B2.

Regarding claim 2, although Butler teaches the configuration of claim 1, Butler does not teach a power storage element.

Portman teaches a power storage element [Fig. 1, super capacitor array 36] that stores transient power for use by the volatile memory, non-volatile memory, and a controller when power is below a particular minimum operating voltage [col. 5, lines 8-43].

It would have been obvious to one of ordinary skill in the art to combine the teaching of Butler and Portman by modifying Butler to include a super capacitor array, such as that taught by Portman. Additionally, it would have been obvious to one of ordinary skill in the art to use the super capacitor array to provide power for a period of time following detection of a power failure condition, as taught by Portman. Both Butler and Portman may be considered analogous art because both teach systems of preserving volatile memory contents in the event of unexpected power failure. Portman teaches that one of the consequences of an unexpected power failure in a memory system is that, even with a backup for the memory (such as a hard disk drive), there may not be sufficient time to commit the most recent writes to the backup device. According to Portman, this represents a risk to the integrity of the data [col. 1, lines 34-45]. Although Butler provides a backup memory to store a copy of the contents of the volatile memory in case of unexpected power loss, Butler does not provide for a temporary power source that will enable

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the completion of writes interrupted by the power loss. As a result, data most recently written may be lost. As such, the teachings of Portman would improve the system of Butler by providing a way to ensure that the most recent writes may be safely backed up [col. 5, lines 57-61].

Regarding claims 3 and 4, as shown in the rejection of claim 2, the super capacitor array of Portman provides enough power for a limited period of time to allow data to be transferred from a volatile memory to a non-volatile memory following an unexpected power loss. Additionally, the rating of the capacitor would have been obvious as a matter of design choice. It would have been obvious to one of ordinary skill to use whatever rating was necessary to achieve a sufficient amount of backup power to facilitate the transferring of data to the non-volatile memory.

Regarding claim 9, it would have been obvious to one of ordinary skill in the art to use a FLASH memory. Although the exemplary embodiment of Butler uses EEPROM, the teachings of Butler are clearly applicable to any form of non-volatile memory [col. 5, lines 62-56].

Regarding claims 17-19, the combination of Butler/Portman teaches a method with steps comprising:

detecting when power is below the particular minimum operating voltage level, providing an indication thereof, providing a transient power when power is below the particular minimum operating voltage level, and controlling the transfer of stored data from a volatile memory to a non-volatile memory based upon the monitored data storage changes for a limited period of time using the transient power [claims 1-3].

Allowable Subject Matter

Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

McLaughlin et al., U.S. Patent No. 6,170,044 B1;

Alaiwan et al., U.S. Patent no. 5,235,700;

Oyama, U.S. Patent No. 5,412,612;

Wells, U.S. Patent No. 7,143,298 B2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji H. Bae whose telephone number is 571-272-7181. The examiner can normally be reached on Monday-Friday, 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on 571-272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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